PPC-L126

VIA Eden Processor-based Fanless Panel PC with 12.1" TFT-LCD

User Manual

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This manual is for the PPC-L126.

Part No. 2008L12642

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FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user manual, it may cause harmful interference to radio communications. Note that even when this equipment is installed and used in accordance with this user manual, there is still no guarantee that interference will not occur. If this equipment is believed to be causing harmful interference to radio or television reception, this can be determined by turning the equipment on and off. If interference is occurring, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment to a power outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Warning! *Any changes or modifications made to the equipment which are not expressly approved by the relevant standards authority could void your authority to operate the equipment.*

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- PPC-L126 series panel PC
- User manual
- Accessories for PPC-L126
  - Y-shaped adapter for PS/2 mouse and keyboard
  - Warranty card
  - Power cord: USA type
  - AC/DC power adapter
  - DC plug-in housing (female) is connected on the AC/DC power adapter
  - Driver CD-ROM disc
  - Mounting kits and packet of screws

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Additional Information and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Warning!

1. *Input voltage rated 18 V ~ 25 V_{dc}, 3.5 A max*
2. *Use a 3 V @ 195 mA lithium battery*
3. *Packing: please carry the unit with both hands, handle with care*
4. *Maintenance: to properly maintain and clean the surfaces, use only approved products or clean with a dry applicator*
5. *CompactFlash: Turn off power before inserting or removing CompactFlash storage card.*

Contact information:

Our European representative:
Advantech Europe GmbH
Kolberger Straße 7
D-40599 Düsseldorf, Germany
Tel: 49-211-97477350
Fax: 49-211-97477300

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED.REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a - Netzkabel oder Netzstecker sind beschädigt.
    b - Flüssigkeit ist in das Gerät eingedrungen.
    c - Das Gerät war Feuchtigkeit ausgesetzt.
    d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. VOSICHT: Explisionsgefahr bei unsachgemaben Austausch der Batterie.Ersatz nur durch densellben order einem vom Hersteller empfohlenemahnlichen Typ. Entsorgung gebrauchter Batterien navh Angaben des Herstellers.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

DISCLAIMER: This set of instructions is given according to IEC704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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CHAPTER 1

General Information

This chapter gives background information on the PPC-L126 panel PC.

Sections include:

- Introduction
- General Specifications
- LCD Specifications
- Dimensions

Chapter 1 General Information

1.1 Introduction

The PPC-L126 panel PC is a VIA low-power Eden processor computer that is designed to serve as a human machine interface (HMI) and as a multimedia computer. It is a PC-based system with 12.1" color TFT LCD display, on-board PCI Ethernet controller, multi-COM port interfaces and an audio controller. With a built-in internal IDE connectors, and an optional PCI/ISA expansion socket, the PPC-L126 is as compact and user friendly as a multi-function computer. In addition, its “fit anywhere” design makes it very flexible and able to be used in many different kinds of installations. It can be wall mounted, panel mounted or stood upright on a desktop.

For system integrators, this simple, complete, compact and highly integrated multimedia system lets you easily build a panel PC into your applications. Common industrial applications include factory automation systems, precision machinery, and production process control. It is also suitable for many nonindustrial applications, including interactive kiosk systems, entertainment management, and car park automation. Our panel PC is a reliable, cost-effective solution to your application's processing requirements.

1.2 General Specifications

General

- **Dimensions (W x H x D):** 340.5 x 269.3 x 70.5 mm
- **Weight:** 3.25 kg
- **Power supply:** 63 watts, ATX type

  Input Voltage: +5 V @ 6 A,+3.3 V @ 6 A,+12 V @ 2 A,
  -12 V @ 0.5 A,-5 V @ 0.5 A, 5 VSB @ 1 A
- **Power adaptor: AC/DC**

  Input voltage: 100 ~ 240 V_{AC}

  Output voltage: 19 V @ 3.79 A
- **Disk drive housing:** Space for one 2.5" HDD, one slim type CD-ROM
- **Front panel:** IP65/NEMA4 compliant

Standard PC functions

- **CPU:** Onboard VIA Eden 667 MHz (or above) processor
- **BIOS:** Award 256 KB Flash BIOS, supports Plug & Play, APM
- **System Chipset:** VIA PN 133T Chipset (TwisterT) & VT82C686B
- **Front side bus:** 133 MHz
- **2nd level cache:** 128 KB L1 and 64 KB L2 cache memory on processor
- **System Memory:** Two 168-pin DIMM sockets, accept up to 1 GB SDRAM
- **PCI bus master IDE interface:** Supports two connectors. Each connector has one channel and supports two IDE devices. Each channel supports PIO modes 0 ~ 4, DMA mode 0 ~ 2, and Ultra DMA 33/66/100 simultaneously. The secondary connector is designated for the CD-ROM drive or CompactFlash card. BIOS supports IDE CDROM boot-up.
- **Keyboard/mouse connector:** Supports standard AT Keyboard and a PS/2 Mouse
- **Parallel port:** One parallel port, supports SPP/EPP/ECP parallel mode.
- **Serial ports:** Four serial ports with three RS-232 ports (COM 1,3, and 4), one RS-232/422/485 port (COM2). All ports are compatible with 16C550 UARTs, +5V/+12V power supply selectable
- **Universal serial bus (USB) port:** Supports up to two USB ports, USB v1.1 and Intel **UHCI** v1.1 compatible

- **PCI/ISA bus expansion slot (optional):** Accepts either one ISA card or one PCI bus card
- **Mini PCI bus expansion slot:** Accepts one type III mini PCI bus card
- **Solid State Disk:** Supports one 50-pin socket for CompactFlash type I/ II (True IDE mode) and IBM MicroDrive HDD
- **Watchdog timer:** 62-level timer intervals automatically generates system reset or IRQ11 when the system stops due to a program error or EMI. Jumperless selection and software enabled/disabled
- **Battery:** 3.0 V @ 195 mA lithium battery
- **Power management:** Supports power saving modes including Normal/ Standby/Suspend modes. APM 1.2 compliant

VGA/LCD Interface

- **Chipset:** VIA Twister chip w/ integrated Savage4 2D/3D/Video Accelerator
- **Frame buffer:** Supports 8/16/32 MB frame buffer w/ system memory
- **Interface:** 4X AGP VGA/LCD interface, Support for 9, 12, 15, 18, 24, 36 bit TFT and optional 16- or 24-bit DSTN panel
- **Display mode:** CRT Modes: 1600 x 1200 @ 16bpp (60 Hz), 1024 x 768 @ 32bpp (85 Hz); LCD/Simultaneous Modes: 1280 x 1024 @ 16bpp (60 Hz), 1024 x 768 @16bpp (60 Hz)

Audio function

- **Chipset:** VIA 82C686 South Bridge
- **Audio controller:** AC97 Ver. 2.0 compliant interface, Multi-stream Direct sound and Direct Sound 3D acceleration
- **Stereo sound:** 18-bit full-duplex codec
- **Audio interface:** Microphone in, Line in, CD audio in; Line out, Speaker L, Speaker R

PCI bus Ethernet interface

- **Chipset:** Realtek RTL 8139C PCI local bus Ethernet controller
- **Ethernet interface:** Full compliance with IEEE 802.3u 100Base-T and 10 Base-T specifications. Includes software drivers and boot ROM
- **100/10Base-T auto-sensing capability**
- **Wake-on-LAN:** Supports Wake-on-LAN function with ATX power control

Touchscreen (Optional)

Type	Analog Resistive
Resolution	Continuous
Light Transmission	80%
Controller	RS232 interface (uses COM4)
Power Consumption	<5 V@ 100 mA
Software Driver	Supports Windows NT/98/ 2000/ME/XP
Durability (touches in a life-time)	350 million

Note: The panel PC with the optionally installed touchscreen will share the COM4 port. Once the touchscreen is installed, COM4 cannot be used for other purposes.

Optional modules

- **Memory:** 64/128/256/512 MB SDRAM
- **HDD:** 2.5" HDD
- **Operating System:** Microsoft® DOS, Windows 98, NT, 2000, XP
- **Touchscreen:** Analog resistive
- **Battery pack:** Rechargable Li-ion 3S2P 11.1 V 4000 mAh

Environment

- **Operating Temperature:** 0 ~ 40 C (32 ~ 104° F)
- **Storage Temperature:** -20 ~ 60° C
- **Relative humidity:** 10 ~ 95% @ 40° C (non-condensing)
- **Shock:** 10 G peak acceleration (11 ms duration)
- **Certification:** EMC: CE, FCC, VCCI, BSMI. Safety: UL1950 and CB
- **Vibration:** 5 ~ 500 Hz 1 G RMS Random vibration

1.3 LCD Specifications

- **Display type**: 12.1" TFT LCD
- **Max. resolution**: 800 x 600
- **Colors**: 262 K
- **Dot size (mm)**: 0.3075 x 0.3075
- **Viewing angle**: 70° (left), 70° (right), 60° (up), 50° (down)
- **Luminance**: 400 cd/m^2
- **Temperature**: -10 ~ 65° C
- ***VR control**: Brightness
- **Backlight lifetime**: 50,000 hours

  * The VR control is defined by hot key in DOS or BIOS mode as below: Ctrl-Alt-F3, Ctrl-Alt-F4.

Note: The color LCD display installed in the panel PC is high-quality and reliable. However, it may contain a few defective pixels which do not always illuminate. With current technology, it is impossible to completely eliminate defective pixels. Advantech is actively working to improve this technology.

1.4 Dimensions

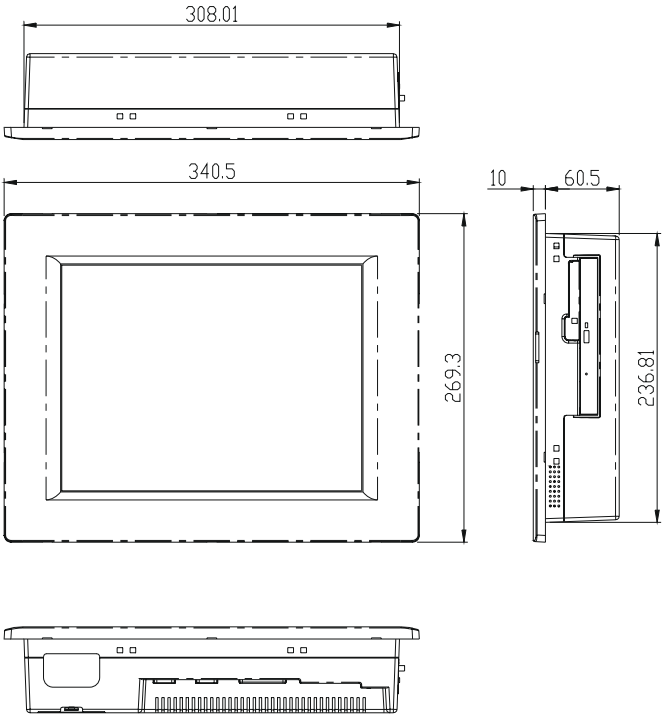


Figure 1.1: Dimensions of PPC-L126

CHAPTER 2

System Setup

This chapter details system setup on the PPC-L126 panel PC.

Sections include:

- A Quick Tour of the Panel PC
- Installation procedures
- Running the BIOS Setup Program
- Installing System Software
- Installing the Drivers

Chapter 2 System Setup

2.1 A Quick Tour of the Panel PC

Before you start to set up the panel PC, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below.

When you place the panel PC upright on the desktop, its front panel appears as shown in Figure 2-1.

Figure 2.1: Front view of PPC-L126 panel PC

When you turn the panel PC around and look at its rear cover, you will find the I/O section as shown in Fig. 2-2. (The I/O section includes various I/O ports, including serial ports, parallel port, the Ethernet port, USB ports, the Line-in/Line-out jack, and so on.) The battery door cover is at the bottom of the panel PC, as shown in Fig. 2-4.

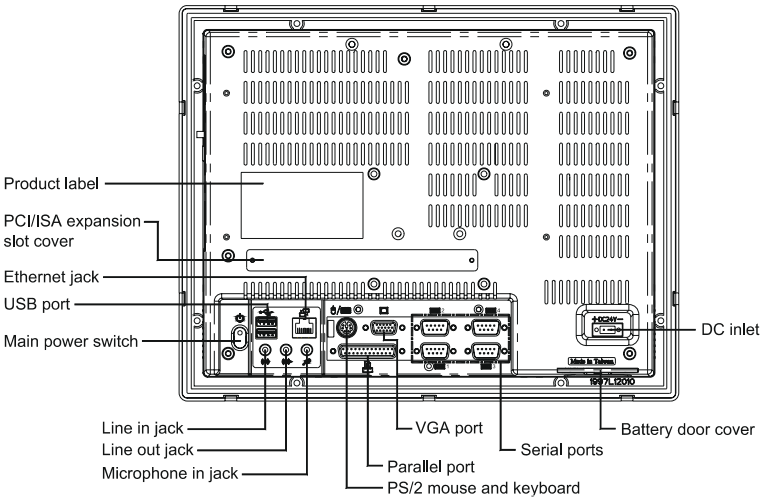


Figure 2.2: Rear view of the panel PC

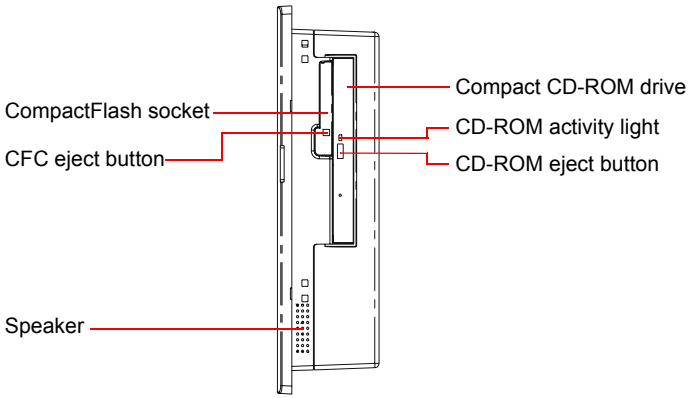


Figure 2.3: Side view of the panel PC

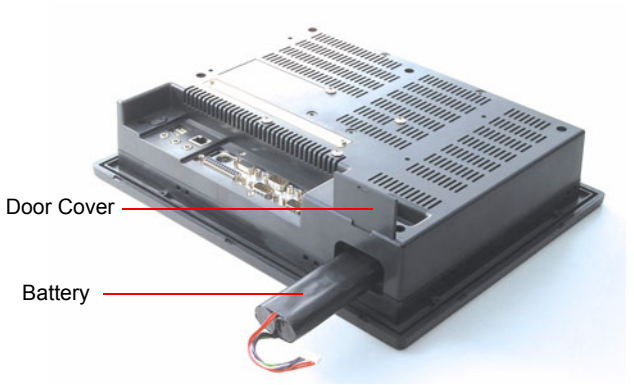


Figure 2.4: Bottom view of the panel PC

2.2 Installation Procedures

2.2.1 Connecting the power cord

The panel PC can only be powered by a DC electrical outlet. Be sure to always handle the power cords by holding the plug ends only. Please follow the Figure 2-5 to connect the male plug of the power cord to the DC inlet of the panel PC.

2.2.2 Connecting the keyboard or mouse

Before you start the computer, please connect the Y-shaped adaptor to the PS/2 mouse and keyboard port on the I/O section of the panel PC, then connect the necessary mouse or keyboard to the Y-shaped adapter or serial ports.

2.2.3 Switching on the power

When you look at the rear side of the panel PC, you will see the power switch as shown in Figure 2-2.

Figure 2.5: Connect the power cord to the DC inlet

2.3 Running the BIOS Setup Program

Your panel PC is likely to have been properly set up and configured by your dealer prior to delivery. You may still find it necessary to use the panel PC's BIOS (Basic Input-Output System) setup program to change system configuration information, such as the current date and time or your type of hard drive. The setup program is stored in read-only memory (ROM). It can be accessed either when you turn on or reset the panel PC, by pressing the “Del” key on your keyboard immediately after powering on the computer.

The settings you specify with the setup program are recorded in a special area of memory called CMOS RAM. This memory is backed up by a bat-

tery so that it will not be erased when you turn off or reset the system. Whenever you turn on the power, the system reads the settings stored in CMOS RAM and compares them to the equipment check conducted during the power on self-test (POST). If an error occurs, an error message will be displayed on screen, and you will be prompted to run the setup program.

If you want to change the setup of BIOS, refer to Chapter 9 for more detailed information.

2.4 Installing System Software

Recent releases of operating systems from major vendors include setup programs which load automatically and guide you through hard disk preparation and operating system installation. The guidelines below will help you determine the steps necessary to install your operating system on the panel PC hard drive.

Note: Some distributors and system integrators may have already pre-installed system software prior to shipment of your panel PC.

Installing software requires an installed HDD. Software can be loaded in the PPC-L126 using any of four methods:

2.4.1 Method 1: Use the Ethernet

You can use the Ethernet port to download software to the HDD.

2.4.2 Method 2: Use the COM or parallel port

You can use Lap Link 6 or similar transmission software. Connect another PC to the PPC-L126 with an appropriate cable and transmit the software to the PPC-L126.

2.4.3 Method 3: Use a CD-ROM

If required, insert your operating system's installation or setup diskette into the diskette drive until the release button pops out.

The BIOS of the panel PC supports system boot-up directly from the CD-ROM drive. You may also insert your system installation CD-ROM into the CD-ROM drive.

Power on your panel PC or reset the system by pressing the "Ctrl+Alt+Del" keys simultaneously. The panel PC will automatically load the operating system from the diskette or CD-ROM.

If you are presented with the opening screen of a setup or installation program, follow the instructions on screen. The setup program will guide you through preparation of your hard drive, and installation of the operating system. If you are presented with an operating system command prompt, such as A:\>, then you must partition and format your hard drive, and manually copy the operating system files to it. Refer to your operating system user manual for instructions on partitioning and formatting a hard drive.

2.5 Installing the Drivers

After installing your system software, you will be able to set up the Ethernet, SVGA, audio, and touchscreen functions. All drivers are stored in a CD-ROM disc entitled “Drivers and Utilities” which can be found in your accessory box.

The standard procedures for installing the drivers are described in Chapters 5, 6, 7, 8 respectively.

The various drivers and utilities in the CD-ROM disc have their own text files which help users install the drivers and understand their functions. These files are a very useful supplement to the information in this manual.

Note: The drivers and utilities used for the PPC-L126 panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utilities.

CHAPTER 3

Hardware Installation and Upgrading

This chapter details installing the PPC-L126 panel PC hardware.

Sections include:

- Overview of Hardware Installation and Upgrading
- Installing the 2.5" Hard Disk Drive (HDD)
- Installing the battery pack

Chapter 3 Hardware Installation and Upgrading

3.1 Introduction

The panel PC consists of a PC-based computer that is housed in a plastic rear panel and a metal shielding case. You can install a HDD, SDRAM, and battery pack by removing the rear panel and shielding case. Any maintenance or hardware upgrades can be easily completed after removing the rear panel and shielding case.

If you are a systems integrator and need to know how to completely disassemble the panel PC, you can find more useful information in Appendix C.

Warning! *Do not remove the plastic rear cover until you have verified that no power is flowing within the panel PC. Power must be switched off and the power cord must be unplugged. Every time you service the panel PC, you should be aware of this.*

3.2 Installing the 2.5" Hard Disk Drive (HDD)

You can attach one enhanced Integrated Device Electronics (IDE) hard disk drive to the panel PC's internal controller which uses a PCI local-bus interface. The advanced IDE controller supports faster data transfer and allows the IDE hard drive to exceed 528 MB. The following are instructions for installation:

1. Detach and remove the plastic rear cover.
2. There is a metal plate which holds the HDD to the upper left-hand side of the metal shielding case. (See Fig. 3-1.)
3. Place the HDD on the metal plate, and tighten the screws.
4. The HDD cable (1 x 44-pin to 1 x 44-pin) is next to the metal plate. Connect the HDD cable to the PC board (CN21). Make sure that the red/blue wire corresponds to Pin 1 on the connector, which is labeled on the board. Plug the other end of the cable into the IDE

hard drive, with Pin 1 on the cable corresponding to Pin 1 on the hard drive.

5. Put the plastic rear cover on and tighten the screws.

.

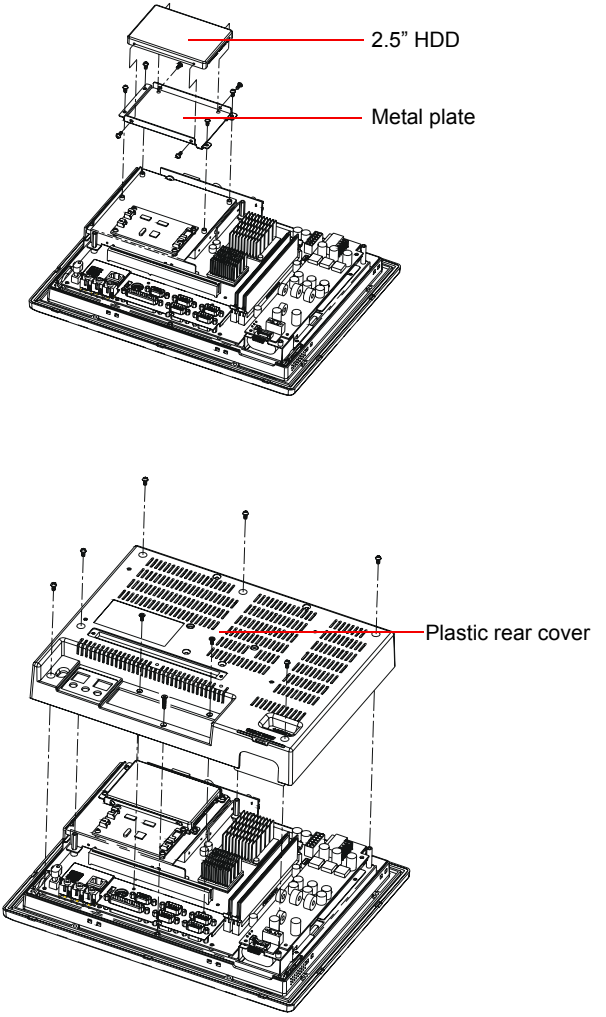


Figure 3.1: Installing primary 2.5" HDD

3.3 Installing the battery pack

1. Pull up the battery door cover on the right bottom of PPC-L126.
2. Put the battery pack in, then connect the battery cable to battery connector in the PPC-L126. Make sure the red wire corresponds to Pin 1 on the connector.
3. Close the battery door cover.

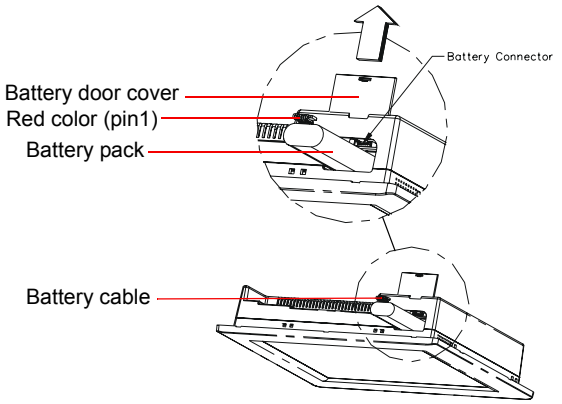


Figure 3.2: Installing the battery pack

CHAPTER 4

Jumper Settings and Connectors

This chapter tells how to set up the panel PC hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedures.

Sections include:

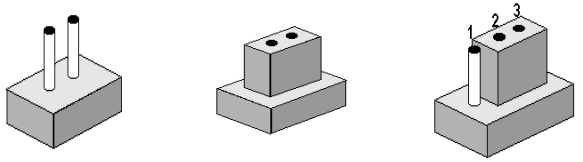
- Jumpers and Connectors
- CMOS Clear for External RTC (J5)
- COM Port Interface
- VGA Interface
- Watchdog Timer Configuration

Chapter 4 Jumper Settings and Connectors

4.1 Jumpers and Connectors

4.1.1 Setting jumpers

You can configure your panel PC to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either pins 1 and 2 or pins 2 and 3.



open closed closed 2-3

The jumper settings are schematically depicted in this manual as follows:.

open closed closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

4.1.2 Jumpers and switch

The motherboard of the PPC-L126 has a number of jumpers that allow you to configure your system to suit your applications. The table below lists the function of each of the board's jumpers.

Table 4.1: Jumpers and their functions

Label	Function
J1	LAN power type select
J2	COM2 RS-232/422/485 setting
J3	COM1/COM2/COM3/COM4 Pin 9 output type setting
J4	Watchdog timer configuration
J5	CMOS clear for external RTC
SW2	Panel type setting (Reserved)

4.1.3 Locating jumpers and switches

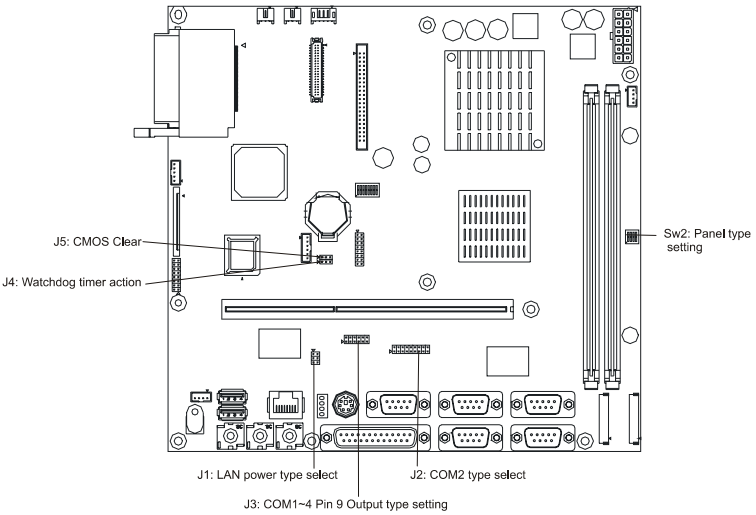


Figure 4.1: Jumpers on the PPC-L126 motherboard

4.1.4 Connectors

Onboard connectors link the PPC-L126 to external devices such as external hard disk drives or floppy drives. The table below lists the function of each of the board's connectors.

Table 4.2: Connectors on the PPC-L126 motherboard

Label	Function
CN1	ATX power connector
CN3	LVDS channel-1 connector
CN4	Inverter power connector
CN5	LVDS channel-2 connector
CN8	Internal speaker connector (Reserved)
CN12	Floppy drive connector (Reserved)
CN21	IDE hard drive connector
CN22	CD-ROM connector
CN23	CompactFlash card (CFC) connector
CN25	Front panel connector
CN26	SIR connector (Reserved)
CN27	Battery status connector
FAN1	Fan power for system
FAN2	Fan power for CPU
Slot 1	PCI/ISA bus expansion connector

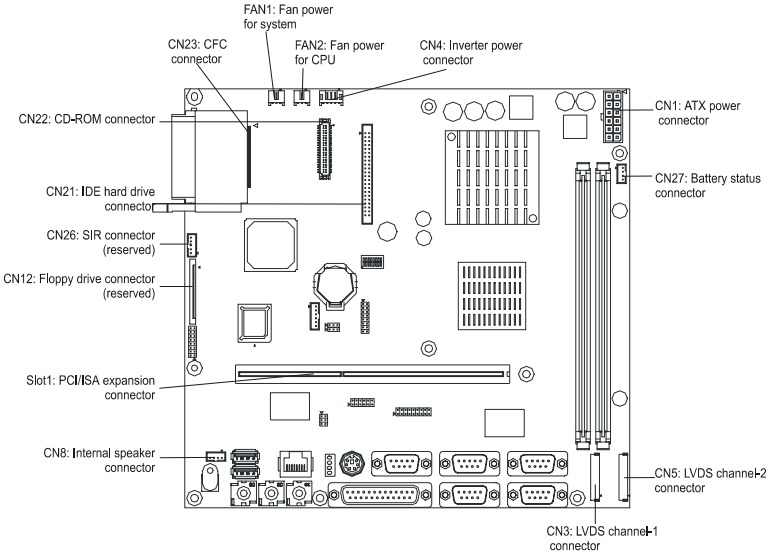


Figure 4.2: Connectors on the PPC-L126 motherboard

4.2 CMOS Clear for External RTC (J5)

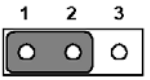
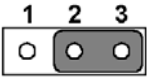
Warning! *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS". Set the jumper back to "Normal operation" before turning on the power supply.*

This jumper is used to erase CMOS data and reset system BIOS information.

The procedure for clearing CMOS is:

1. Turn off system.
2. Short pin 2 and pin 3.
3. Return jumper to pins 1 and 2.
4. Turn on the system. The BIOS is now reset to its default setting.

Table 4.3: CMOS clear (J5)

*Normal operation	Clear CMOS
	

* default setting

4.3 COM Port Interface (J2, J3, J4)

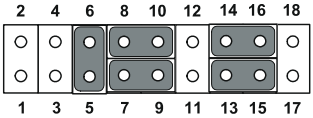
The panel PC provides four serial ports (COM1, 3, 4: RS-232; COM2: RS-232/422/485) in one COM port connector.

4.3.1 COM2 RS-232/422/485 setting (J2)

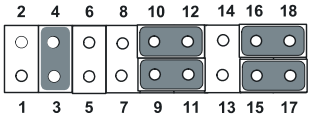
COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J2.

Table 4.4: COM2 RS-232/422/485 setting (J2)

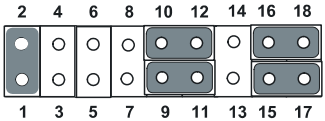
***RS-232**



RS-422



RS-485



* default setting

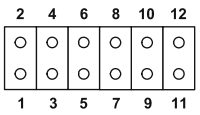
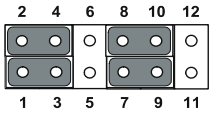
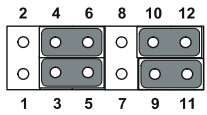
The IRQ and the address ranges for COM1, 2, 3, and 4 are fixed. However, if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table overleaf shows the default settings for the panel PC's serial ports.

COM1 and COM2 are one set. You can exchange the address range and interrupt IRQ of COM1 for the address range and interrupt IRQ of COM2. After exchanging, COM1's address range is 3F8 ~ 3FF and its request IRQ is IRQ4: and COM2's address range is 2F8 ~ 2FF and its interrupt IRQ is IRQ3.

COM3 and COM4 are another set. Their address and IRQ is the same as the COM1/COM2 set

Table 4.5: Serial port default settings		
Port	**Address Range**	**Interrupt**
COM1	3F8 ~ 3FF	IRQ4
COM2	2F8 ~ 2FF	IRQ3
COM3	3E8 ~ 3EF	IRQ10
COM4	2E8 ~ 2EF	IRQ5

4.3.2 COM1/COM2/COM3/COM4 pin 9 output setting (J3)

Table 4.6: COM1/2/3/4 pin 9 settings (J3)		
***Normal operation**	**+5 V output**	**+12 V output**
		
*default setting		

Note: *Pins 1, 3 and 5 are for COM1*
Pins 2, 4 and 6 are for COM2
Pins 7, 9 and 11 are for COM3
Pins 8, 10 and 12 are for COM4

4.4 VGA Interface

The panel PC's AGP VGA interface can drive conventional CRT displays. It is also capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays.

4.4.1 LCD panel power setting

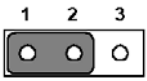
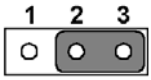
The panel PC's AGP SVGA interface supports 5 V and 3.3 V LCD displays. The LCD cable already has a built-in default setting. You do not need to adjust any jumper or switch to select the panel power.

4.5 Watchdog Timer Configuration (J4)

An onboard watchdog timer reduces the chance of disruptions which EMP (electromagnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software. (Refer to Appendix B.)

When the watchdog timer activates (i.e. CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via jumper J4 as shown below:

Table 4.7: Watchdog activity selection (J4)

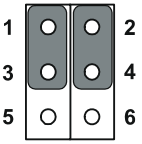
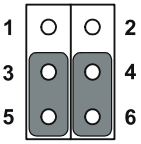
*System reset	IRQ11
	

* default setting

4.6 Wake on LAN select (J1)

The PCM-L126T provides Wake-on LAN function when ATX power is used. To enable Wake-on LAN function, the J1 should be set as shown below:

Table 4.8: Wake-on-LAN select (J1)

*Normal Power	Wake-on-LAN
	

* default setting

CHAPTER 5

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

Sections include:

- Introduction
- Installation of Ethernet Driver
  - for Windows 98/2000/ME
  - for Windows NT
  - for Windows XP
- Further Information

Chapter 5 PCI Bus Ethernet Interface

5.1 Introduction

The PPC-L126 is equipped with a high performance 32-bit Ethernet chipset, which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible.

The Ethernet port provides a standard RJ-45 jack. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

5.2 Installation of Ethernet Driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PPC-L126, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for Windows.

Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

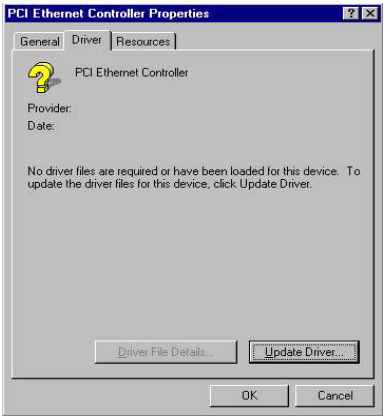
Note: The CD-ROM drive is designated as "D" throughout this chapter.

Note: <Enter> means pressing the "Enter" key on the keyboard.

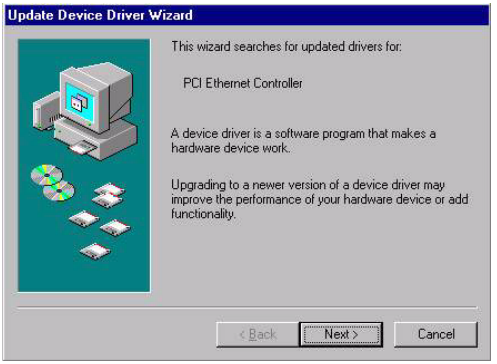
5.2.1 Installation for Windows 98/2000/ME

1. a. Select “Start”, “Settings”, “Control Panel”, and “System”.
   b. Click “Device Manager” and “Other Devices”.
   c. Double-click “PCI Ethernet Controller”.

2. a. Choose “Driver”.
   b. Click “Update Driver”.



3. Click “Next”.

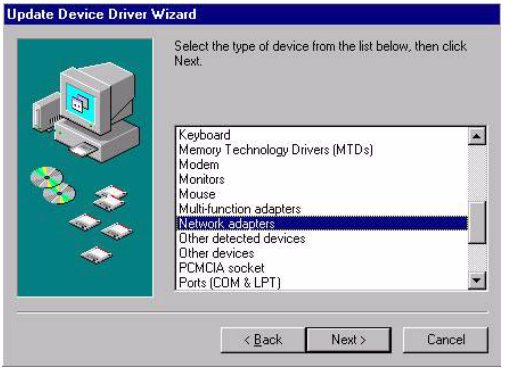


4. a. Choose “Display a list of all the drivers in a specific location,….”.

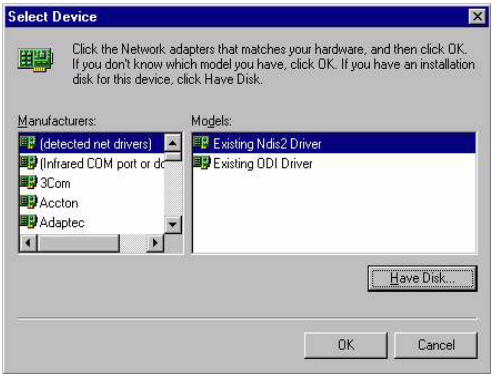
   b. Click “Next”.

5. a. Select “Network Adaptors”.

   b. Click “Next”.



6. a. Click “Have Disk”.



7. a. Type the path “D:\PPC-L126\Lan\WIN98”.

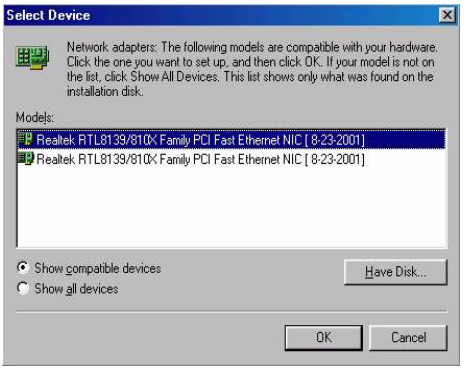
   b. Click “OK”.

Note: *For Windows 2000, please type the path “D:\PPC-L126\Lan\WIN2K”*

For Windows ME, please type the path “D:\PPC-L126\Lan\WINME”

8. a. Choose “Realtek RTL8139/810K Family PCI Fast Ethernet NIC[8-23-2001]”.

   b. Click “OK”.

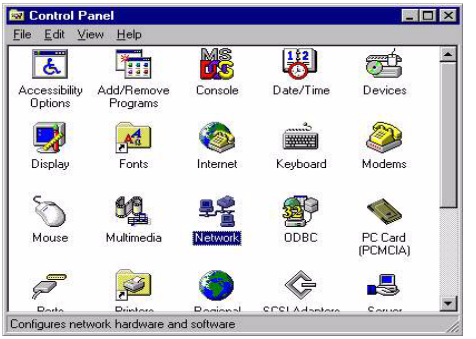


9. a. Choose “Next”.

10. a. Click “Finish”.

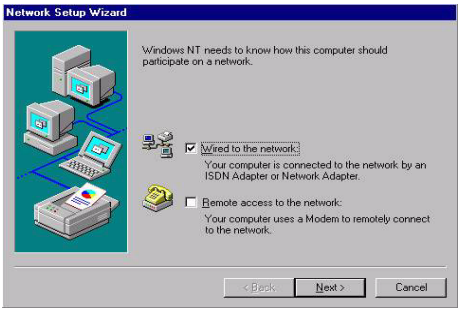
5.2.2 Installation for Windows NT

1. Select “Start”, “Settings”, “Control Panel”, and then double click the “Network” icon.

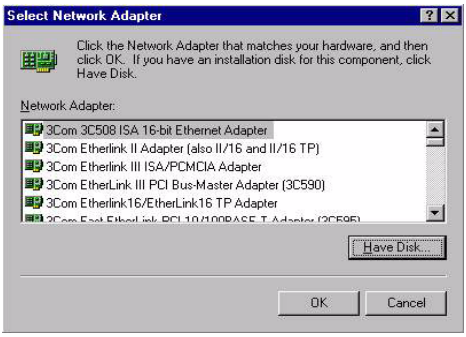


2. a. Select “wire to the network”.

   b. Click “Next”.

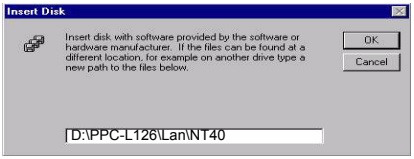


3. Press “Have Disk”.



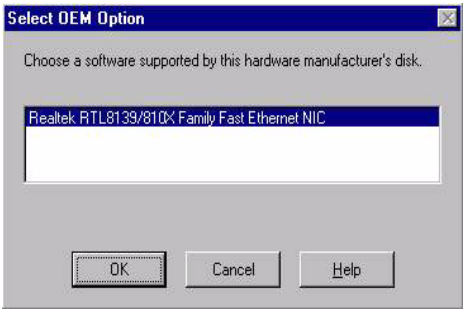
4. a. Type the path: D:\PPC-L126\Lan\NT40

   b. Press the “OK” button.

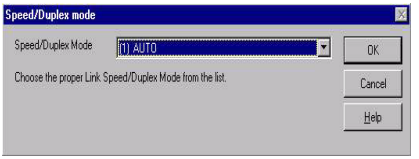


5. a. Choose the highlighted “RTL8139[A/B/C/8130] PCI Fast Ethernet Adapter”.

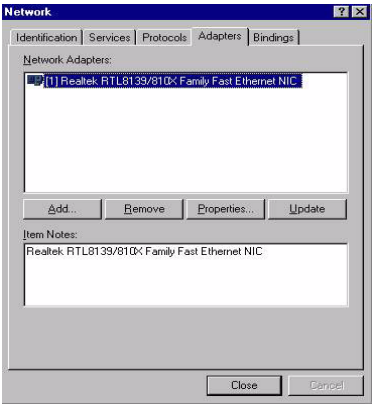
   b. Click the “OK” button.



6. Click ok.



7. Click Close.



5.2.3 Installation for Windows XP

Users are not required to install the Ethernet driver themselves.

5.3 Further Information

Realtek website: www.realtek.com.tw

Advantech websites: www.advantech.com

www.advantech.com.tw

CHAPTER 6

PCI SVGA Setup

This chapter provides information on the PCI SVGA setup.

Sections include:

- Introduction
- Installation of SVGA Drivers
  - for Windows 98/2000/ME
  - for Windows NT
  - for Windows XP

Further Information

Chapter 6 PCI SVGA Setup

6.1 Introduction

The PPC-L126 has an onboard AGP flat panel/VGA interface. The specifications and features are described as follows:

6.1.1 Chipset

The PPC-L126 uses a VIA Twister 8606T chipset from VIA Technology Inc. for its AGP/SVGA controller. It supports many popular LCD, and LVDS LCD displays and conventional analog CRT monitors. The VIA8606T VGA BIOS supports color TFT and DSTN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

6.1.2 Display memory

The Twister chip can support 8/16/32MB frame buffer shared with system memory; the VGA controller can drive CRT displays or color panel displays with resolutions up to 1280 x 1024 at 16 M colors.

6.1.3 Display types

CRT and panel displays can be used simultaneously. The PPC-L126 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. If you want to enable the CRT display only or the flat panel display only, please contact VIA Technology Inc., or our sales representative for detailed information.

6.2 Installation of the SVGA Driver

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PPC-L126.

Notes: *1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*

2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

3. <Enter> means pressing the "Enter" key on the keyboard.

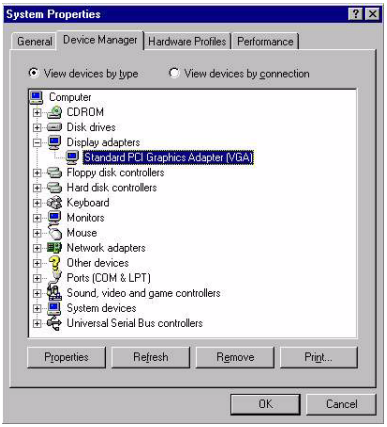
6.2.1 Installation for Windows 95/98/ME

1. a. Select "Start", "Settings", "Control Panel", "System".

   b. Click the "Device Manager" and "Display adapter" items.

   c. Remove the "Standard PCI Graphics Adapter (VGA)" item.

   d. Click "OK".

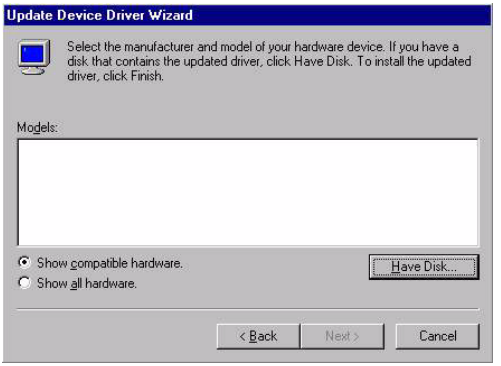


2. a. Choose the “Driver” label.
   b. Click “Update Driver…”.

3. Click “Next”.

4. Click “Next”.

5. Click “Have Disk…”.



6. a. Type “D:\PPC-L126\VGA\Win9x_ME”.
   b. Click”OK”.

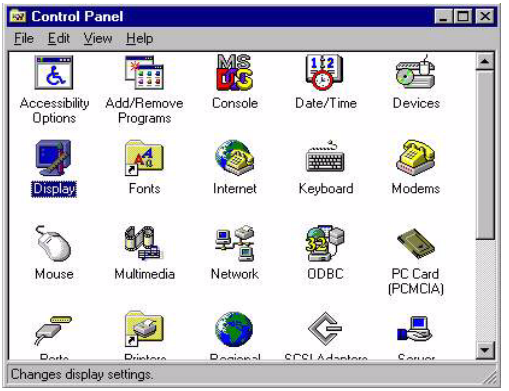
Note: *For Windows 2000, please type the path "D:\PPC-L126\Vga\Win2000"*

7. Press "Finish" to reboot.

6.2.2 Installation for Windows NT

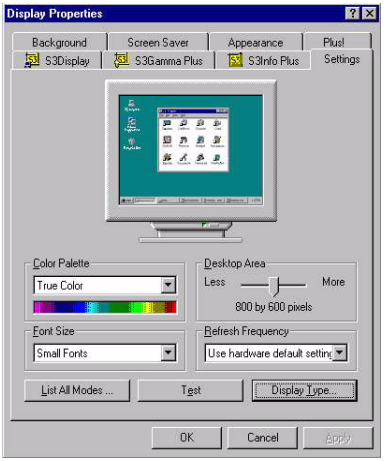
1. a. Select "Start", "settings", "Control Panel".

   b. Double click the"Display" icon.

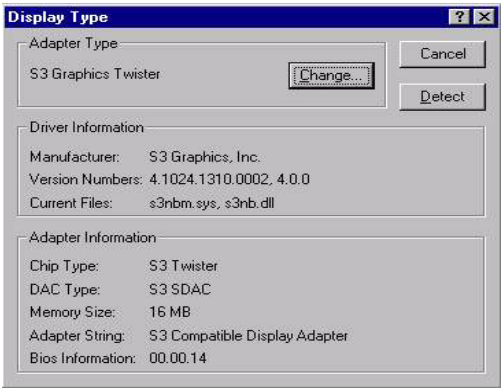


2. a. Choose the "Settings" label.

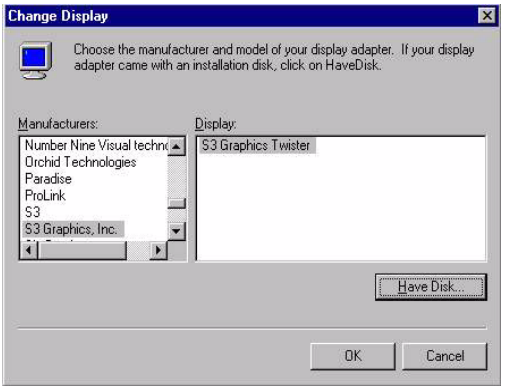
b. Press the “Display Type” button.



3. Press the “Change…” button.



4. Click the “Have Disk…” button.

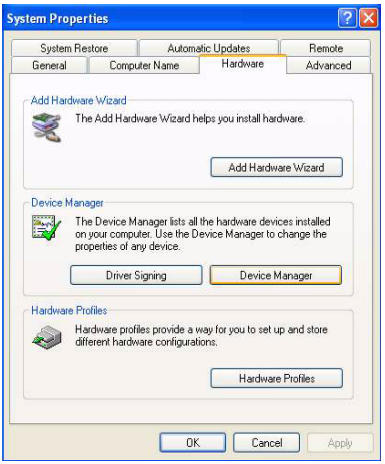


5. Click “OK”.

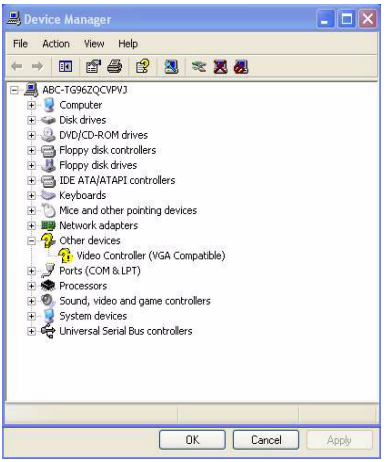
6.2.3 Installation for Windows XP

1. Select “System”, “Settings”, “Control Panel” and double click the “system” icon.

2. Choose “Hardware” and “Device Manager”, press “OK”.



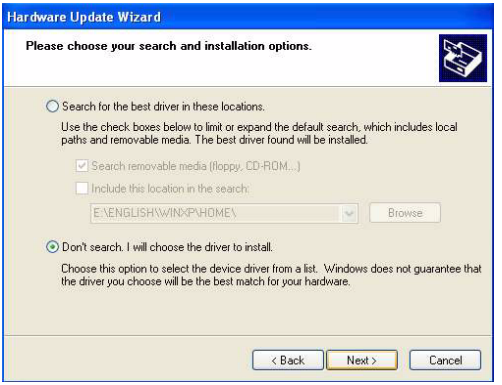
3. Choose “Video Controller (VGA Compatible), press “OK”.



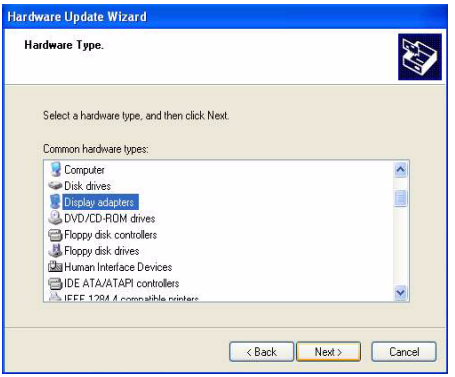
4. Choose “Driver”, “Update Driver”, press “OK”.

5. Choose “Install from a list.....”, press “Next”.

6. Choose “Don’t search. I will....”, press “Next”.

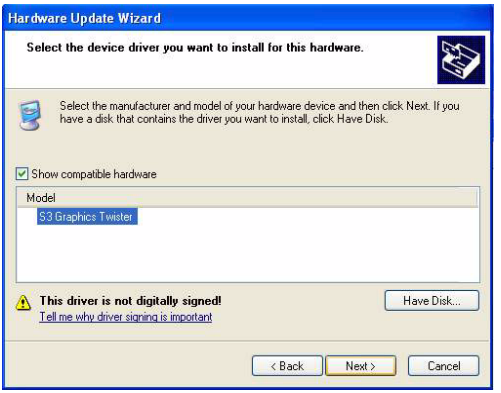


7. Choose “Display adapters”, press “Next”.



8. Type the path D:\PPC-L126\Vga\WINXP then press “OK”.

9. Choose “S3 Graphics Twister” then press “Next”.



10. Once all the driver files have been copied, click “Finish”.

11. You will then be prompted to restart your computer to complete the driver installation. Click “Yes”.

6.3 Further Information

For further information about the AGP/VGA installation in your PPC-L126, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

VIA website: www.via.com.tw

Advantech websites: www.advantech.com

www.advantech.com.tw

After installing the VGA driver under Win 98, if you want to play a VCD, please install Directx 8.1 (or higher) which you can find at www.microsoft.com.

CHAPTER 7

Audio Setup

This chapter provides information on the Audio setup.

Sections include:

- Introduction
- Installation of Audio Driver
  - for Windows 98/2000/ME
  - for Windows NT
  - for Windows XP

Chapter 7 Audio Setup

7.1 Introduction

The PPC-L126's on-board audio interface provides high quality stereo sound and FM music synthesis (ESFM) by using the VIA VT82C686 audio controller from VIA. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

The PPC-L126 on board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for the audio, FM, and MPU-104 logical devices. It is compatible with Sound Blaster™; Sound Blaster Pro™ version 3.01, voice and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

7.2 Installation of the Audio Driver

Before installing the audio driver, please take note of the procedures detailed below. You must know which operating system you are using in your PPC-L126, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even though you are not familiar with instructions for Windows.

Notes: *1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*

2. For convenience, the CD-ROM drive is designated as “D” throughout this chapter.

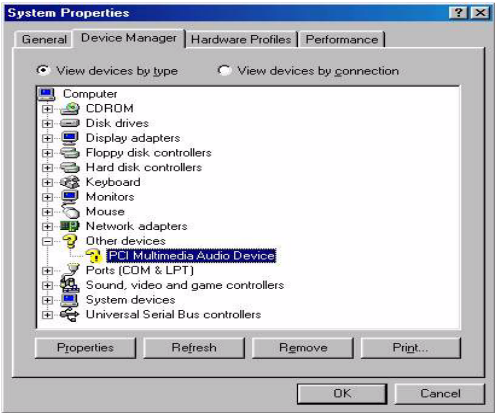
3. <Enter> means pressing the “Enter” key on the keyboard.

7.2.1 Installation for Windows 98/2000/ME

1. a. Select “Start”, “Settings”, “Control Panel”, and double click the “System” icon.

   b. Click the “Device Manager” and “PCI Multimedia Audio Device” items.

   c. Select “Properties”.

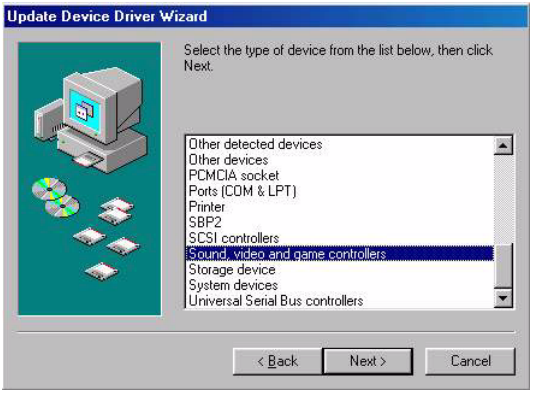


2. Select “Driver” tab, click “Update Driver”.

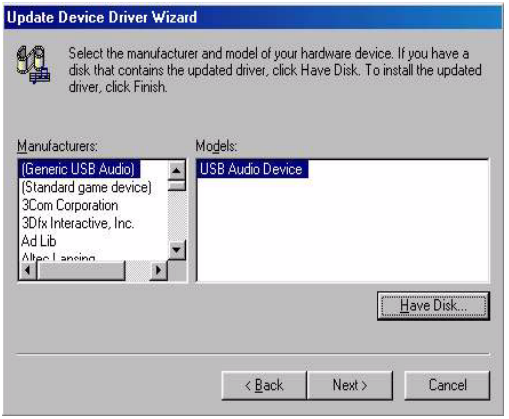
3. Click “Next “.

4. Choose “Display a list of all the drivers in a specific location...”, then click “Next “.

5. Choose “Sound, video and game controllers”, click “Next “.



6. Click “Have Disk “.



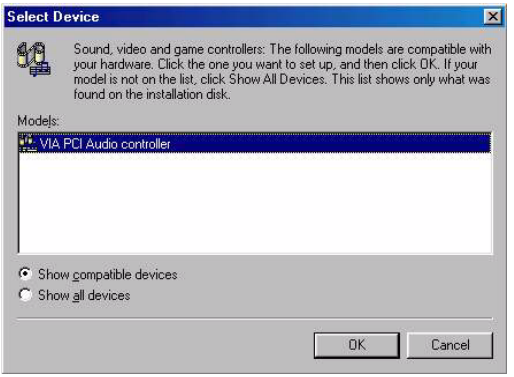
7. a. Type the path
"D:\PPC-L126\Audio\98SE_Me_2K_XP\Win98SE".

   b. Click "OK".

Note: *For Windows 2000, please type the path "D:\PPC-L126\Audio\98SE_Me_2K_XP\Win2000"*

For Windows ME, please type the path "D:\PPC-L126\Audio\98SE_Me_2K_XP\Win ME"

8. Select "VIA PCI Audio controller", Click "OK".

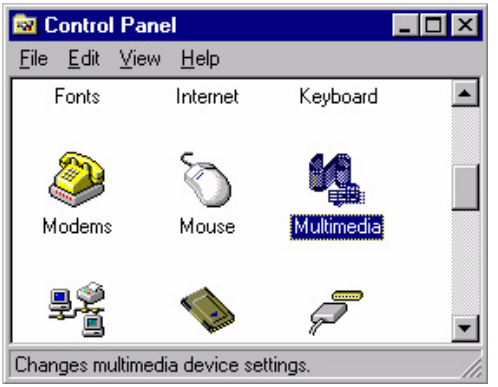


9. Click “Next”.

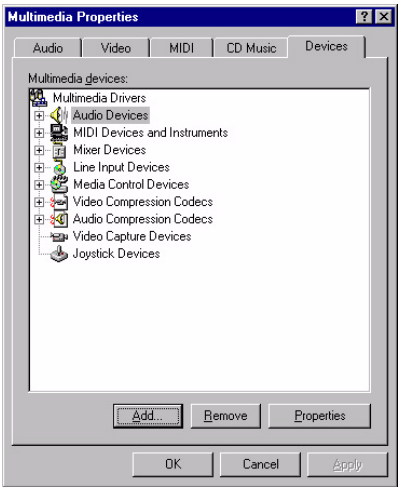
10. Click “Finish”.

7.2.2 Installation for Windows NT

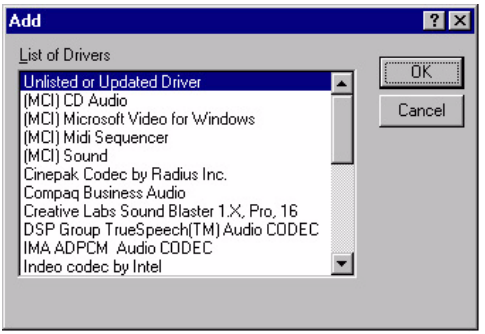
1. Click “Start” and select “Settings”. Click “Control Panel” and double-click “Multimedia”.



2. In the Multimedia Properties window, select the “Devices” tab, then select the “Audio Devices” item, and click “Add...”.

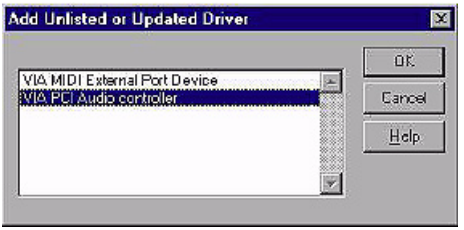


3. In the Add window, select the “Unlisted...” item and click “OK”.



4. When the Install Driver window opens, put the utility disc in the CD drive. Type: “D:\PPC-L126\Audio\WinNT”, then click “OK”.

5. In the Add Unlisted or Updated Driver window, select the “VIA PCI Audio controller” item, then click “OK”.



6. In the System Setting Change window, click “Restart Now”.

7.2.3 Installation for Windows XP

After installing Windows XP, the system can automatically detect the audio hardware and install the driver from the driver database in Windows XP when the system reboots.

CHAPTER 8

Touchscreen

This chapter provides information on the touchscreen setup.

Sections include:

- Introduction
- Installation of Touchscreen Drivers
  - for Windows 98/ME
  - for Windows 2000/XP

Chapter 8 Touchscreen

8.1 Introduction

8.1.1 General information

The PPC-L126's optional touchscreen incorporates advanced second-generation 5-wire resistive, impact-resistant technology. It allows 80% light transmission. The resistive model has an antiglare surface. This model provides greatly enhanced visual resolution. It also has new improved scratch-resistant features.

The touchscreen is manufactured from UL-recognized components. Its fire resistance meets the UL-746C, 19 mm (0.75") flame test standard. Systems incorporating the touchscreen, controllers, and cables have been approved to FCC Class A and Class B standards.

For more detailed information, please visit the following website:

www.elotouch.com

8.1.2 General specifications

Please refer to Chapter 1, Section 1.2 of this manual.

8.1.3 Environmental specifications

Temperature:-10 ~ 50° C (operating)

-40 ~ 71° C (storage)

Relative humidity:

90 RH at 35° C (operating)

90 RH at 35° C for 240 hours, non-condensing (storage)

Chemical resistance: The active area of the touchscreen is resistant to the following chemicals when exposed for a period of one hour at a temperature of 21° C (71° F):

- Acetone
- Methylene chloride
- Methyl-ethyl-ketone
- Isopropyl alcohol
- Hexane
- Ammonia-based glass cleaners
- Turpentine

- Mineral spirits
- Foods and beverages

8.2 Installation of Touchscreen Drivers

The touchscreen driver for Windows contains a native, 32-bit driver and a 32-bit control panel program for the PPC-L126 system.

To facilitate installation of the touchscreen driver, you should read the instructions in this section carefully before you attempt installation.

Notes: *1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*

2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

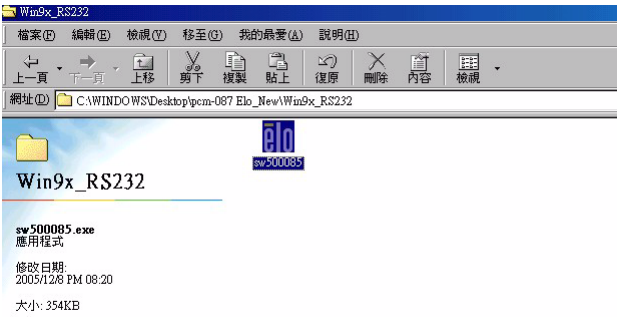
3. <Enter> means pressing the "Enter" key on the keyboard.

8.2.1 Installation for Windows 98/ME

1. a. Select "Start", "Run".

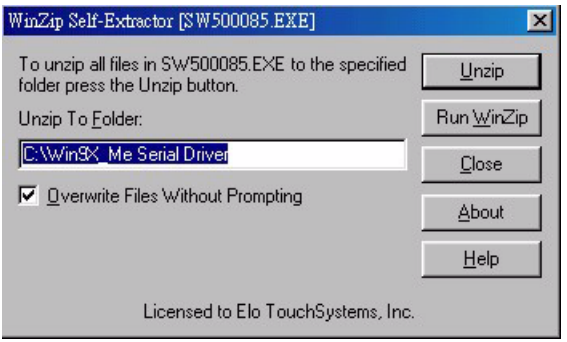
   b. Type the path:
   D:\PPC-L126T\PCM-9671 Driver\Touchscreen\pcm-087 Elo_New\Win9x_RS232

   c. Click "OK".

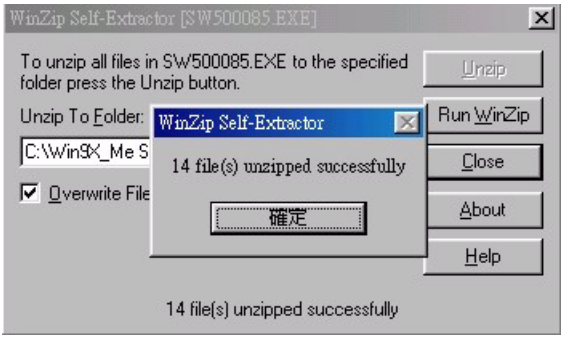


2. Double-click “sw500085”.

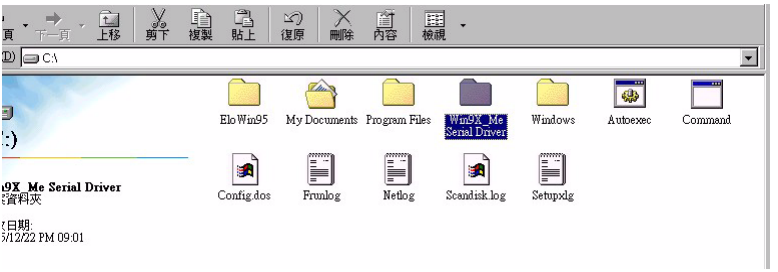
3. Click “Unzip”.



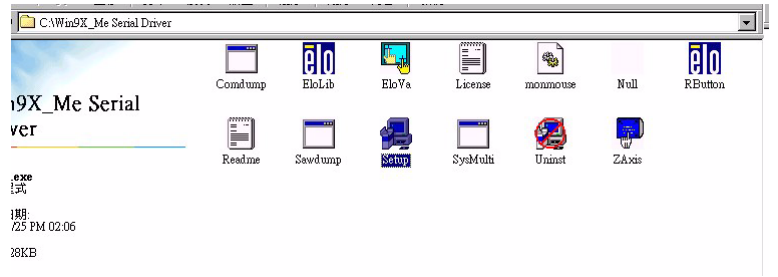
4. Click “OK”.



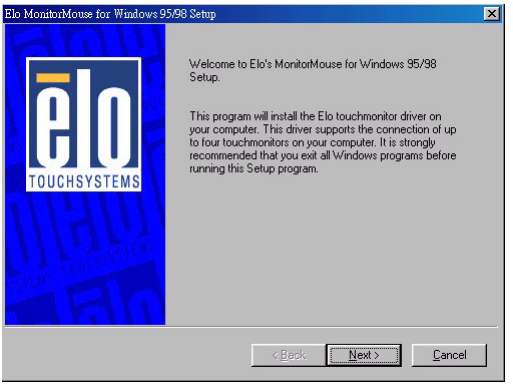
5. Double-click “Win9X_Me Serial Driver”.



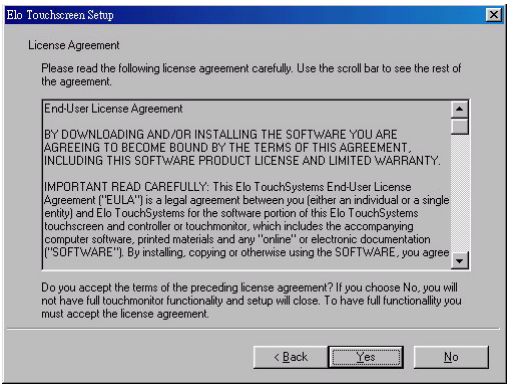
6. Double-click “Setup”.



7. Click “Next”.

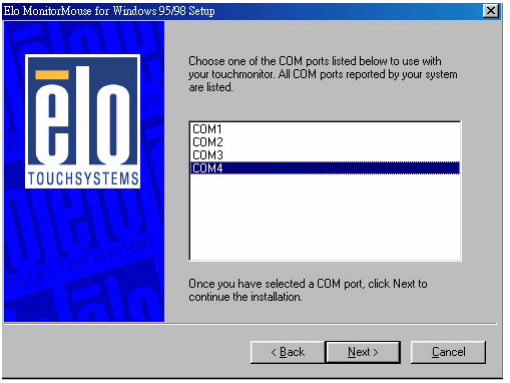


8. Click “Yes” to agree to the license.

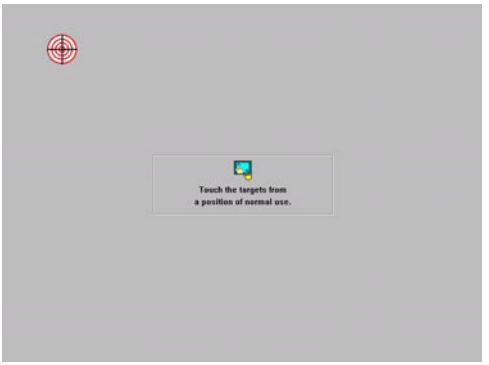


9. Click “Next”.

10. Choose COM4 , and then click next.

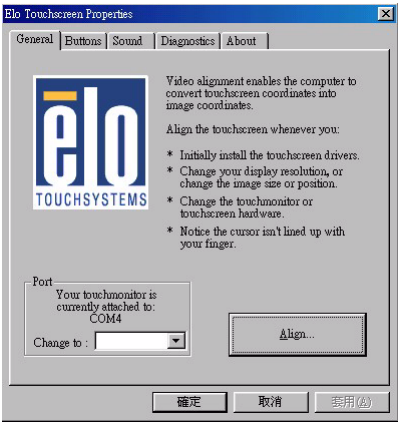


11. Touch targets to calibrate the touchscreen controller.



12. Click “Finish”.

13. Click “OK”.



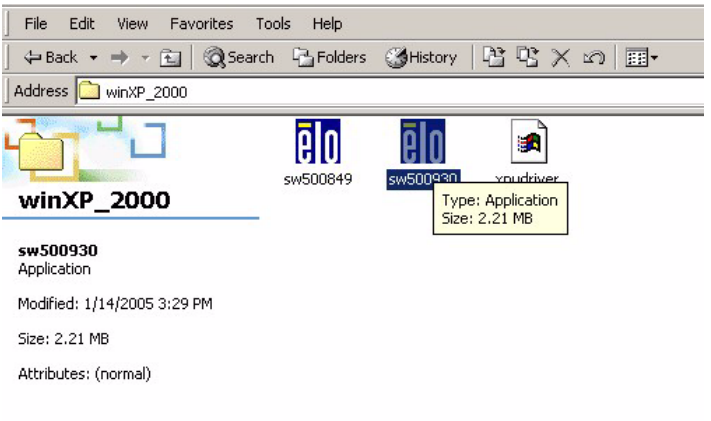
8.2.2 Installation for Windows 2000/XP

1. a. Select “Start”, then “Run”.

   b. Type the path:
   D:\PPC-L126T\PCM-9671 Driver\Touchscreen\pcm-087 Elo_New\XP-2K Universal

   c. Click “OK”.

2. Double-click “sw500930”.



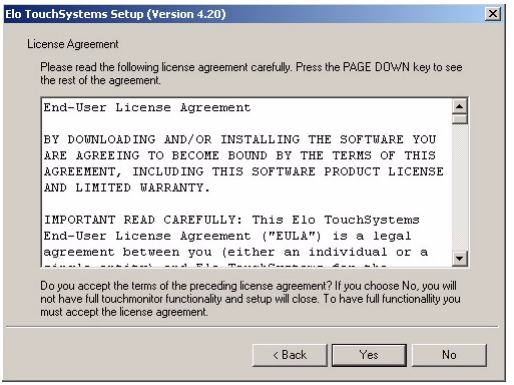
3. Click “OK”.

4. Click “Unzip”.

5. Click “OK”.

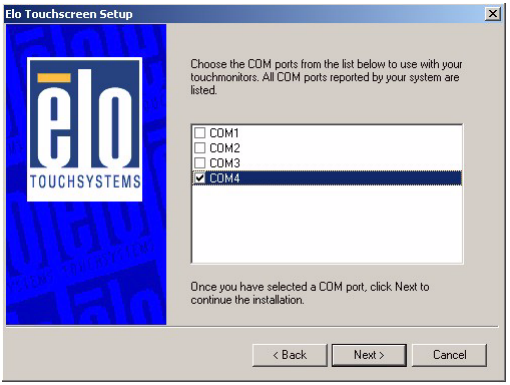
6. Choose “install serial touch screen drivers”, then click “Next”.

7. Click “Yes” to agree to the license.

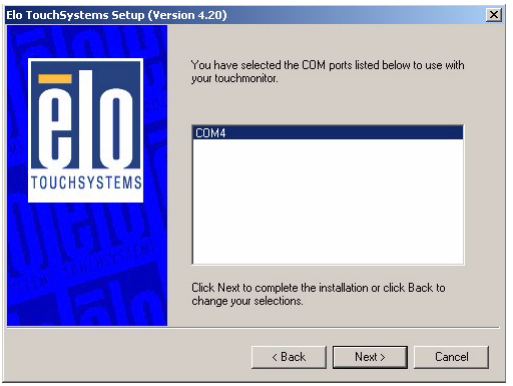


8. Click “Next”.

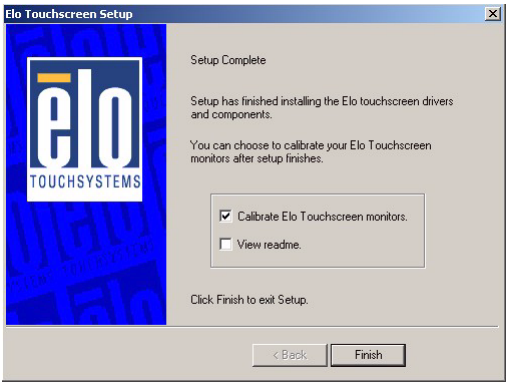
9. Choose COM4, and then click “Next”.



10. Click “Next”.



11. Click “Finish”.



CHAPTER 9

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 9 Award BIOS Setup

The PPC-L126 comes with an Award BIOS chip that contains the ROM setup for your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information shown in the setup program and tells you how to modify the settings according to your system configuration. Some items are not explained, because it is recommended that users don't change them.

Note: Values for the various setup items that appear on your screen (including default values) may not be the same as those shown in this chapter. This is because the BIOS is revised and updated from time to time. If in doubt, check Advantech's website for the latest BIOS versions and related information.

9.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the booting with non-fatal errors. Non-fatal errors are usually shown with the following instructions:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue booting.

9.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

The CMOS settings need changing in the following situations:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PPC-L126 CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

9.2 Award BIOS setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

9.2.1 Entering setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

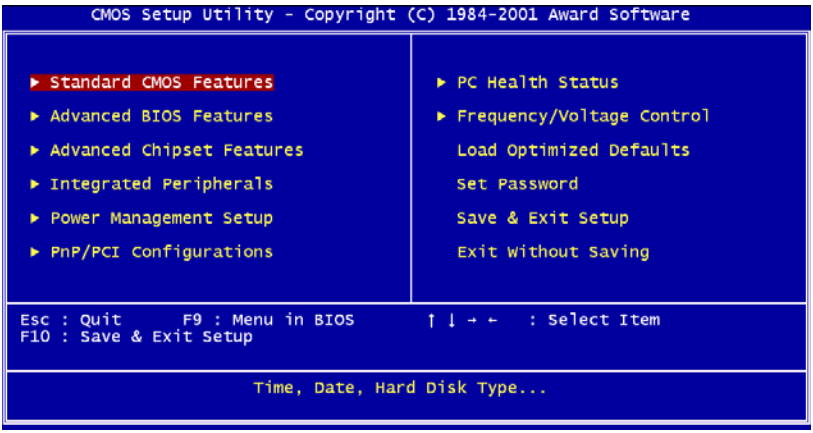


Figure 9.1: BIOS setup program initial screen

9.2.2 Standard CMOS Features setup

When you choose the Standard CMOS Features option from the Initial Setup Screen menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

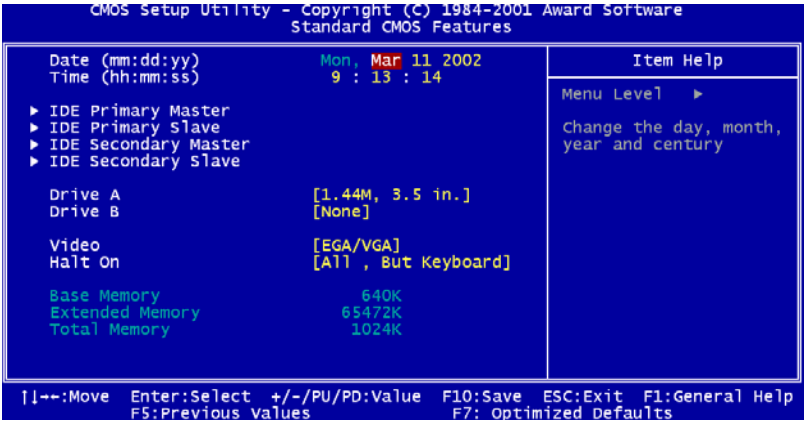


Figure 9.2: CMOS Features setup

9.2.3 Advanced BIOS Features setup

By choosing the Advanced BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. Users are not encouraged to run the BIOS and Chipset Features setup programs. Your system should have been fine-tuned before shipping. Improper setup may cause the system to fail, so consult your dealer before making any changes.

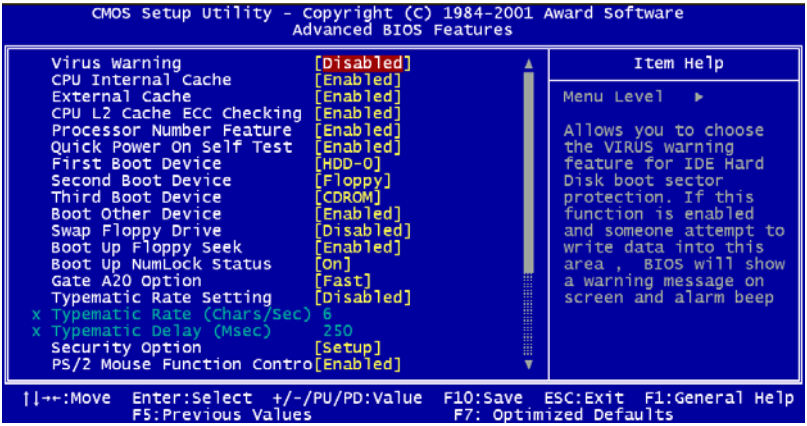


Figure 9.3: Advanced BIOS Features setup

9.2.4 Advanced Chipset Features setup

By choosing the Advanced Chipset Features option from the Initial Setup Screen menu, the screen below is displayed.

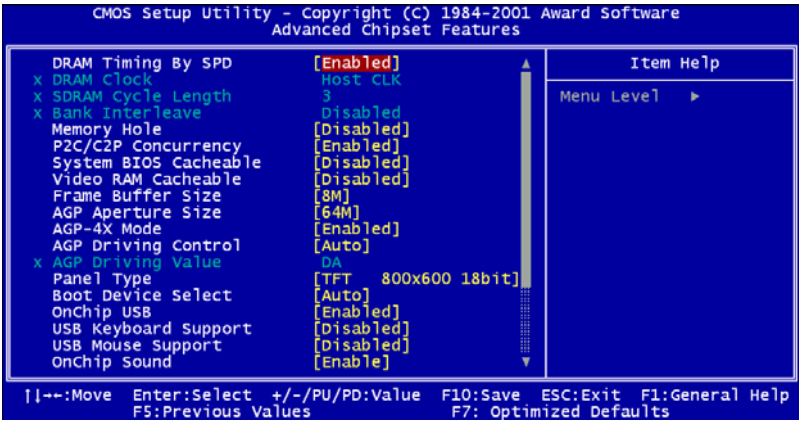


Figure 9.4: Advanced Chipset Features setup

Note: It is strongly recommended that setup items in this section NOT be changed, because advanced knowledge is required to effect such changes.

9.2.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the default values for the PPC-L126.

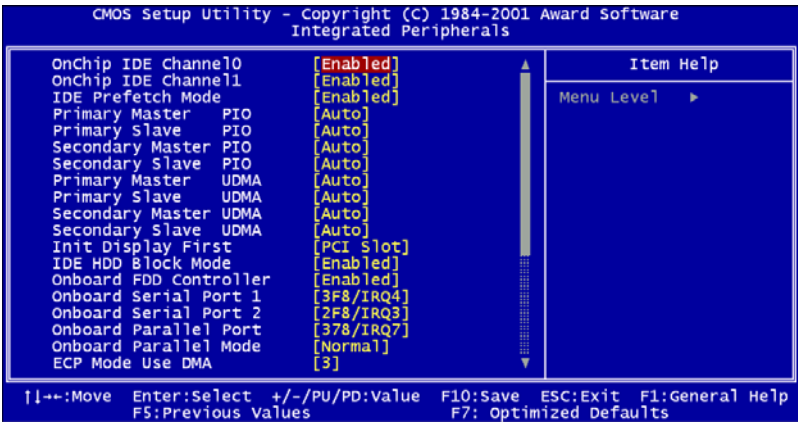


Figure 9.5: Integrated Peripherals

9.2.6 Power Management Setup

By choosing the Power Management Setup option from the Initial Setup Screen menu, the screen below is displayed.

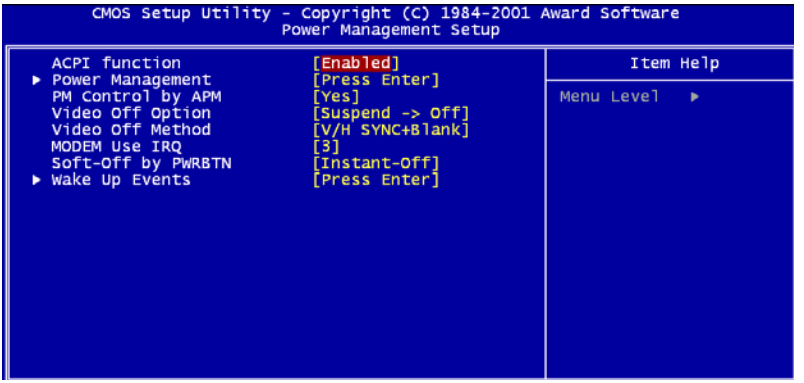


Figure 9.6: Power Management Setup

9.2.7 PnP/PCI Configurations

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed.

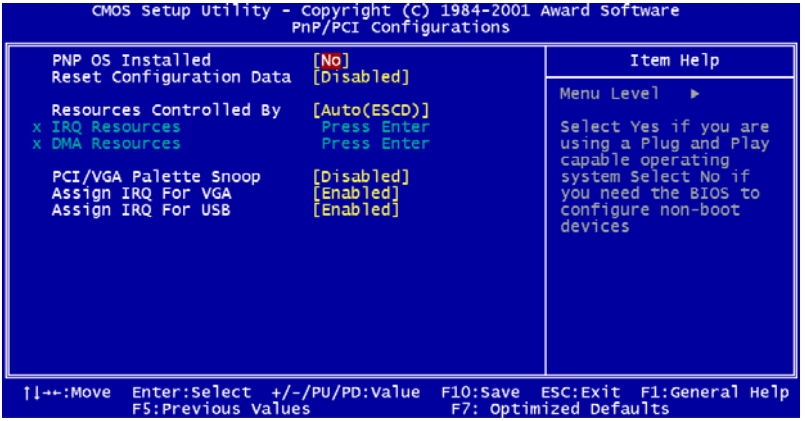


Figure 9.7: PnP/PCI Configurations

9.2.8 PC Health Status

The PC Health Status option displays information such as CPU and motherboard temperatures, fan speeds, and core voltage.

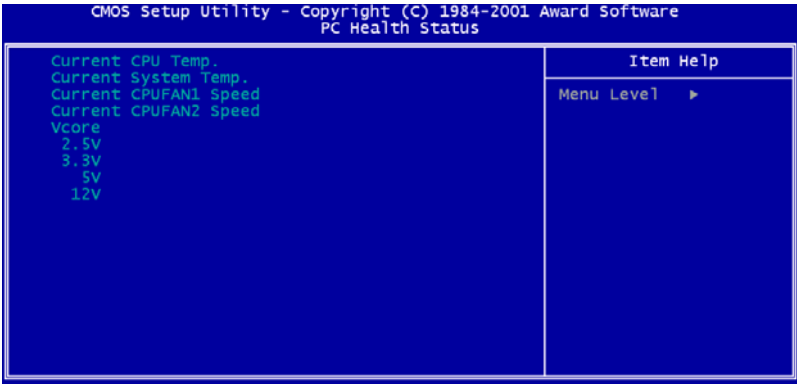


Figure 9.8: PC Health Status

9.2.9 Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed.

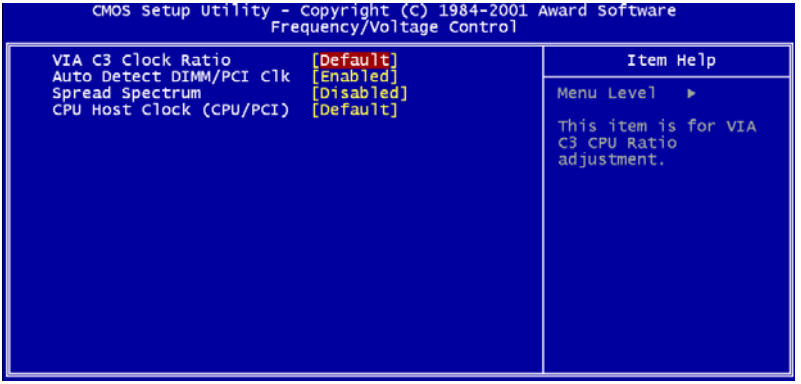


Figure 9.9: Frequency/Voltage Control

Warning *Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.*

9.2.10 Load Optimized Defaults

Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable), these defaults will load automatically when you turn the PPC-L126 system on.

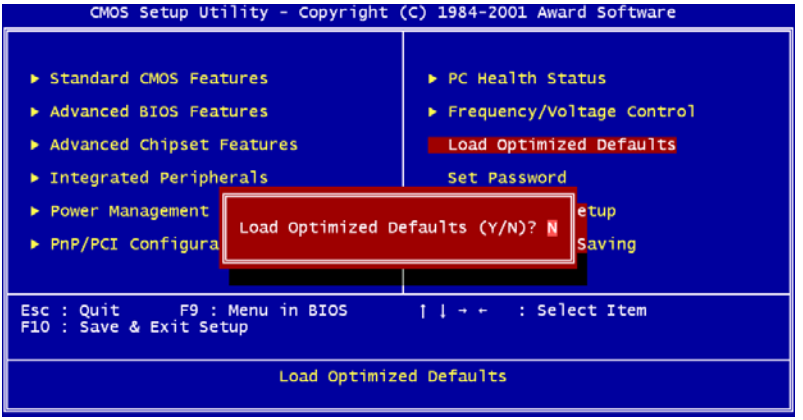


Figure 9.10: Load BIOS defaults screen

9.2.11 Set Password

Note *To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. Setup requires a password only to enter Setup. System requires the password either to enter Setup or to boot the system.*

A password may be at most 8 characters long.

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the existing password and press <Enter>.
3. You will see "Confirm Password." Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, enter the new password and press <Enter>.
5. At the "Confirm Password" prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password,” enter the existing password and press <Enter>.
3. You will see “Confirm Password.” Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, don’t enter anything; just press <Enter>.
5. At the “Confirm Password” prompt, again don’t type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

9.2.12 Save & Exit Setup

If you select this option and press <Y> then <Enter>, the values entered in the setup utilities will be recorded in the chipset’s CMOS memory. The microprocessor will check this every time you turn your system on and use the settings to configure the system. This record is required for the system to operate.

9.2.13 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

Appendix A

Programming the Watchdog Timer

The PPC-L126 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Appendix A Programming the Watchdog Timer

To use the watchdog timer, your program must write a time interval value to I/O port 443 (hex). The value range is from 01 (hex) to 3E (hex), and the related time interval is from 1 sec. to 62 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
•	•
3E	62 sec.

After data entry, your program must refresh the watchdog timer by writing to I/O port 443 (hex) while simultaneously setting it. To disable the watchdog timer, your program should read I/O port 443 (hex).

The following BASIC program shows how to use the watchdog timer.

```
10    REM Watchdog timer example program
20    OUT &H443, data REM Start and restart the watchdog
30    GOSUB 1000 REM Your application task #1,
40    OUT &H443, data REM Reset the timer
50    GOSUB 2000 REM Your application task #2,
60    OUT &H443, data REM Reset the timer
70    X=INP (&H443) REM, Disable the watchdog timer
80    END
1000  REM Subroutine #1, your application task
•               •
1070  RETURN
2000  REM Subroutine #2, your application task
•               •
2090  RETURN
```

Appendix B

I/O Pin Assignments

Appendix B Pin Assignments

B.1 Keyboard and PS/2 Mouse Connector (CN20)

Table B.1: Keyboard and mouse connector (CN20)

Pin	Signal
1	KB_DAT
2	MS-DAT
3	GND
4	+5 V
5	KB_CLK
6	MS-CLK

B.2 USB port (CN17, CN18)

Table B.2: USB port (CN17, CN18)

Pin	Signal
1	VCC
2	DATA-
3	DATA+
4	GND

B.3 COM1 RS-232 serial port (CN13)

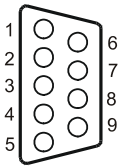


Table B.3: COM1 RS-232 serial port (CN13)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TxD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

B.4 COM2 (CN14)

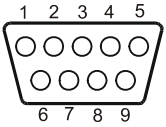


Table B.4: COM2 (CN14)

Pin	Signal RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	
6	DSR		
7	RTS		
8	CTS		
9	RI		

B.5 COM3 RS-232 serial port (CN4)

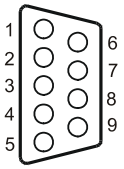


Table B.5: COM3 RS-232 serial port

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TxD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

B.6 COM4 RS-232 serial port (CN16)

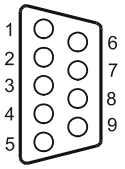


Table B.6: COM3 RS-232 serial port

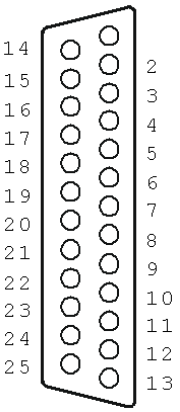
Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TxD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

B.7 Parallel Port Connector (CN11)

Table B.7: Parallel Port Connector (CN11)

Pin	Signal	Pin	Signal
1	STROBE*	2	D0
3	D1	4	D2
5	D3	6	D4
7	D5	8	D6
9	D7	10	ACK*
11	BUSY	12	PE
13	SLCT	14	AUTOFD*
15	ERR*	16	INIT*
17	SLCTINI*	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

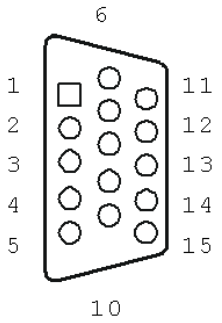
* low active



B.8 VGA Connector (CN2)

Table B.8: VGA connector (CN2)

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	N/A
5	GND
6	GND
7	GND
8	GND
9	N/A
10	GND
11	N/A
12	SPDAT
13	HSYNC
14	VSYNC
15	SPCLK



B.9 PCI/ISA Bus connector (Slot 1)

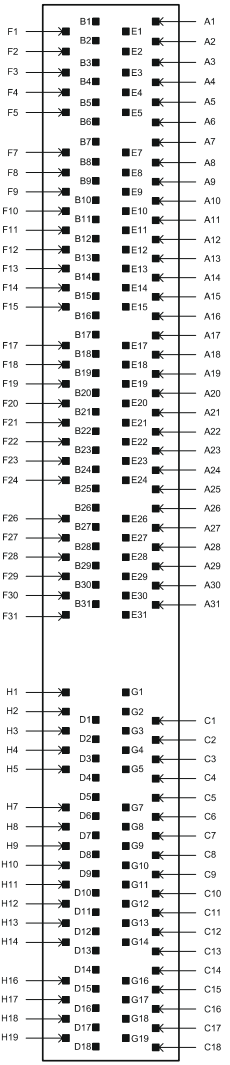


Figure B.1: PCI/ISA connector (Side View)

Table B.9: PCI/ISA pin assignments (Pins A and B)

Pin	Signal	Pin	Signal
A1	IOCHK	B1	GND
A2	SD7	B2	RST
A3	SD6	B3	VCC
A4	SD5	B4	IRQ9
A5	SD4	B5	-5 V
A6	SD3	B6	DRQ2
A7	SD2	B7	-12 V
A8	SD1	B8	OWS
A9	SD0	B9	+12 V
A10	IORDY	B10	GND
A11	AEN	B11	SMW
A12	SA19	B12	SMR
A13	SA18	B13	IOW
A14	SA17	B14	IOR
A15	SA16	B15	DACK3
A16	SA15	B16	DRQ3
A17	SA14	B17	DACk1
A18	SA13	B18	DRQ1
A19	SA12	B19	RFSH
A20	SA11	B20	SCLk
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B24	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	DACk2
A27	SA4	B27	TC
A28	SA3	B28	ALE
A29	SA2	B29	VCC
A30	SA1	B30	OSC
A31	SA0	B31	GND

Table B.10: PCI/ISA pin assignments (Pins C and D)

Pin	Signal	Pin	Signal
C1	sbhe	D1	mem16
C2	la23	D2	io16
C3	la22	D3	irq10
C4	la21	D4	irq11
C5	la20	D5	irq12
C6	la19	D6	irq15
C7	la18	D7	irq14
C8	la17	D8	dacko
C9	memr	D9	drq0
C10	memw	D10	dack5
C11	sd8	D11	drq5
C12	sd9	D12	dack6
C13	sd10	D13	drq6
C14	sd11	D14	dack7
C15	sd12	D15	drq7
C16	sd13	D16	v_{cc}
C17	sd14	D17	master
C18	sd15	D18	gnd

Table B.11: PCI/ISA pin assignments (Pins E and F)

Pin	Signal	Pin	Signal
E1	gnd	F1	GND
E2	gnd	F2	gnd
E3	int 1	F3	int3
E4	int 2	F4	int4
E5	v_{cc}	F5	v_{cc}
E6	---	F6	---
E7	v_{cc}	F7	v_{cc}
E8	PCIRST	F8	pclk2
E9	GNT1	F9	GND
E10	REQ1	F10	GNT2
E11	gnd	F11	gnD
E12	pclk1	F12	REQ2
E13	gnd	F13	ad31
E14	ad30	F14	ad29
E15	REQ3	F15	nc
E16	---	F16	---
E17	GNT3	F17	nc
E18	ad28	F18	ad27
E19	ad26	F19	ad25
E20	ad24	F20	cbe3
E21	ad22	F21	ad23
E22	ad20	F22	ad21
E23	ad18	F23	ad19
E24	nc	F24	PMF
E25	---	F25	---
E26	NC	F26	VSB3.3
E27	ad16	F27	ad17
E28	frame	F28	irdy
E29	cbe2	F29	devsel
E30	trdy	F30	lock
E31	stop	F31	perr

Table B.12: PCI/ISA pin assignments (Pins G and H)

Pin	Signal	Pin	Signal
G1	NC	H1	serr
G2	NC	H2	ad15
G3	cbe1	H3	ad14
G4	par	H4	ad12
G5	gnd	H5	gnd
G6	---	H6	- - -
G7	gnd	H7	gnd
G8	ad13	H8	ad10
G9	ad11	H9	ad8
G10	ad9	H10	ad7
G11	cbeo	H11	ad5
G12	ad6	H12	ad3
G13	ad4	H13	ad1
G14	ad2	H14	ad0
G15	---	H15	- - -
G16	v_{cc}	H16	v_{cc}
G17	v_{cc}	H17	v_{cc}
G18	gnd	H18	gnd
G19	gnd	H19	gnd